

What is claimed is:

1 1. A temperature probe comprising:
2 a probe body;
3 a hollow tip member secured to the probe body, wherein the hollow tip member
4 comprises:
5 an outer wall as a thermal contact surface,
6 an inner wall inside the outer wall,
7 a thermal isolation space formed between the outer wall and the inner wall,
8 and
9 a hollow cavity surrounded by the inner wall;
10 a thermal sensor disposed within the hollow tip member for sensing the
11 temperature of the thermal contact surface and producing a temperature signal;
12 and
13 a set of transmission wires connected to the thermal sensor for passing the
14 temperature signal.

1 2. The temperature probe as recited in claim 1 wherein the outer wall or inner wall
2 of the hollow tip member is made of thermal conductivity metal.

1 3. The temperature probe as recited in claim 1 wherein the inner wall of the
2 hollow tip member is made of thermal insulating material.

1 4. The temperature probe as recited in claim 2 further comprising a thermal
2 insulating layer inside or outside the inner wall.

1 5. The temperature probe as recited in claim 1 wherein at least a portion of the set
2 of transmission wires is disposed within the thermal isolation space formed between
3 the outer wall and the inner wall, such that allowing the thermal sensor and the set of
4 transmission wires to reach thermal equilibrium quickly.

1 6. The temperature probe as recited in claim 5 wherein the transmission wires are
2 bonded to the inside of the outer wall.

1 7. The temperature probe as recited in claim 6 wherein the transmission wires are
2 bonded to the inside of the outer wall in a spiral form.

1 8. The temperature probe as recited in claim 1 wherein the thermal sensor is
2 disposed within the thermal isolation space formed between the outer wall and the
3 inner wall, such that allowing the thermal sensor and the set of transmission wires to
4 reach thermal equilibrium quickly.

1 9. The temperature probe as recited in claim 8 wherein the thermal sensor is
2 mounted on the inside of the outer wall.

1 10. The temperature probe as recited in claim 1 wherein the inner wall comprises
2 a hole for allowing the transmission wires to be passed into the hollow cavity.

1 11. The temperature probe as recited in claim 10 wherein the transmission wires
2 are mounted within the thermal isolation space near the hole of the inner wall.

1 12. A thermometer with a temperature probe, comprising:
2 an integrated and inseparable body member including a probe portion and a
3 display portion;
4 a hollow tip member secured to the probe portion, wherein the hollow tip member
5 comprises:
6 an outer wall as a thermal contact surface,
7 an inner wall inside the outer wall,
8 a thermal isolation space formed between the outer wall and the inner wall,
9 and
10 a hollow cavity surrounded by the inner wall;
11 a thermal sensor disposed within the thermal isolation space, for sensing the
12 temperature of the thermal contact surface and producing a temperature signal;
13 a set of transmission wires connected to the thermal sensor for passing the
14 temperature signal, in which at least a portion of each transmission wire is
15 disposed within the thermal isolation space; and

16 display means, mounted on the display portion, attached to the thermal sensor
17 through the set of wires for receiving the temperature signal and displaying a
18 temperature corresponding to the received temperature signal.

1 13. The thermometer as recited in claim 12 wherein the thermal sensor is mounted
2 on the inside of the outer wall of the hollow tip member by heat conductive glue.

1 14. The thermometer as recited in claim 12 wherein the display means comprises
2 a display and circuitry coupled to the display, in which the circuitry is connected to
3 the transmission wires to receive the temperature signal and drives the display to
4 show the corresponding temperature.

1 15. The thermometer as recited in claim 12 further comprising a switch for
2 turning on and off the display means.

1 16. A thermometer with a temperature probe, comprising:
2 a separable body member including a probe body and a display body;
3 a hollow tip member secured to the probe body, wherein the hollow tip member
4 comprises:
5 an outer wall as a thermal contact surface,
6 an inner wall inside the outer wall,
7 a thermal isolation space formed between the outer wall and the inner wall,
8 and

9 a hollow cavity surrounded by the inner wall;
10 a thermal sensor disposed within the thermal isolation space, for sensing the
11 temperature of the thermal contact surface and producing a temperature signal;
12 a set of transmission wires connected to the thermal sensor for passing the
13 temperature signal, in which at least a portion of each transmission wire is
14 disposed within the thermal isolation space; and
15 a display, mounted on the display body, attached to the thermal sensor through the
16 set of transmission wires for receiving the temperature signal and displaying a
17 temperature corresponding to the received temperature signal.